

Climate Futures

Central New Mexico Climate Change Scenario Planning Project

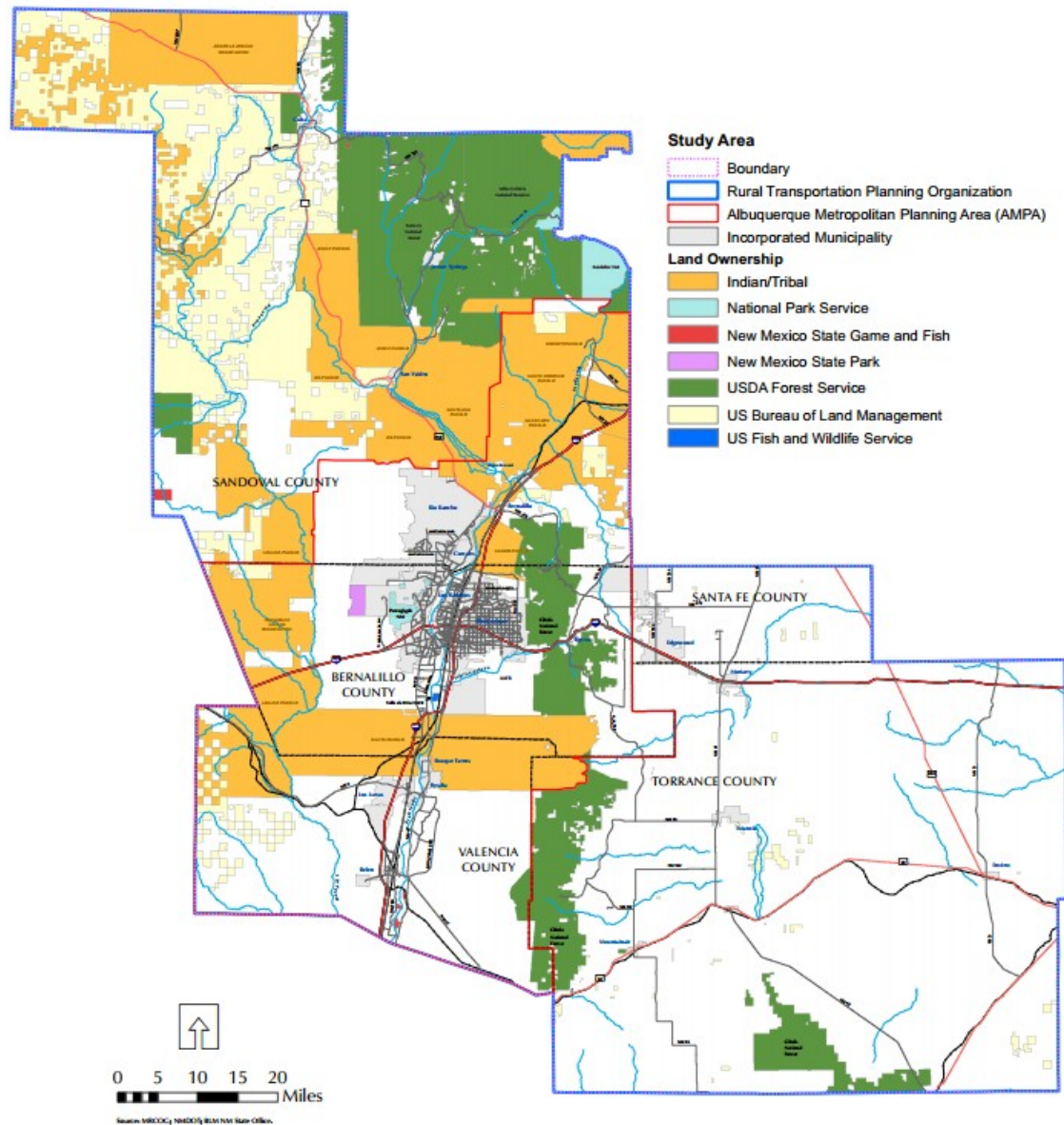
Benjamin Rasmussen

July 10, 2014



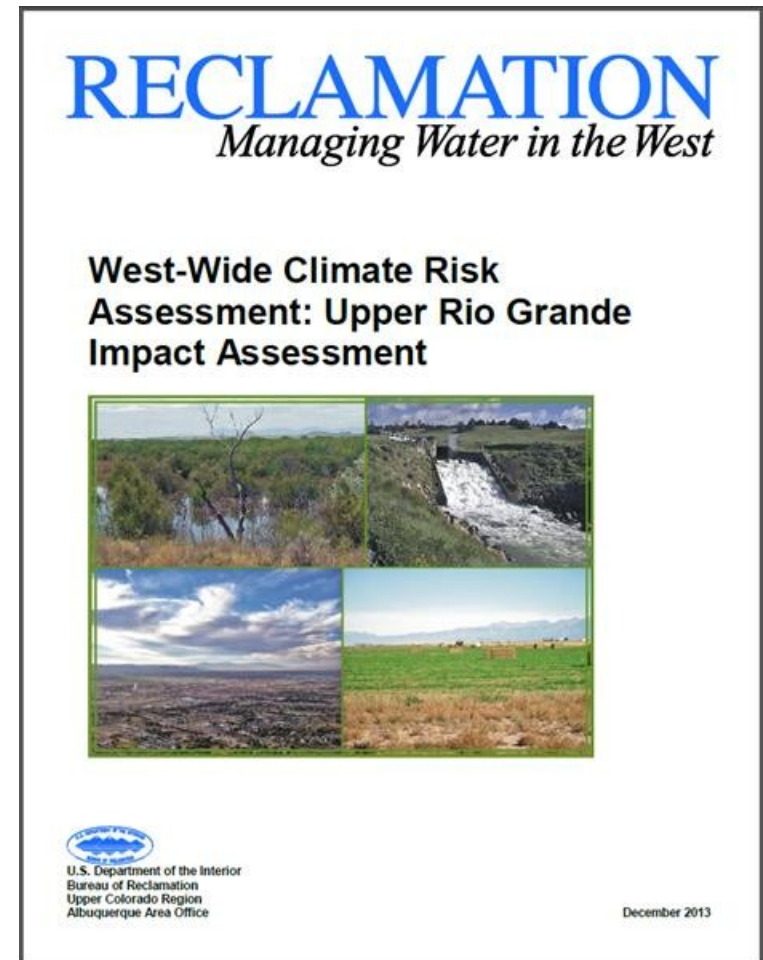
Outline

- ❑ Background
- ❑ Data & methodology
- ❑ Overview of findings
- ❑ Individual findings
- ❑ Implications



Background

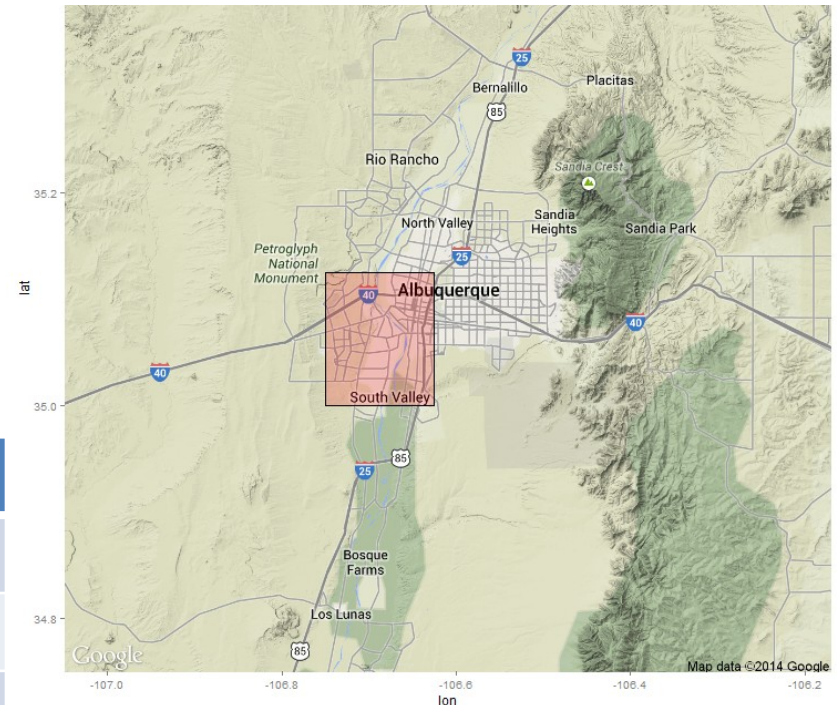
- ❑ Regional climate futures derived from:
 - Project-developed tool (Volpe, NPS, and BOR)
 - Literature review (CLIMAS, BOR, other)
- ❑ Independent of land use and transportation scenarios



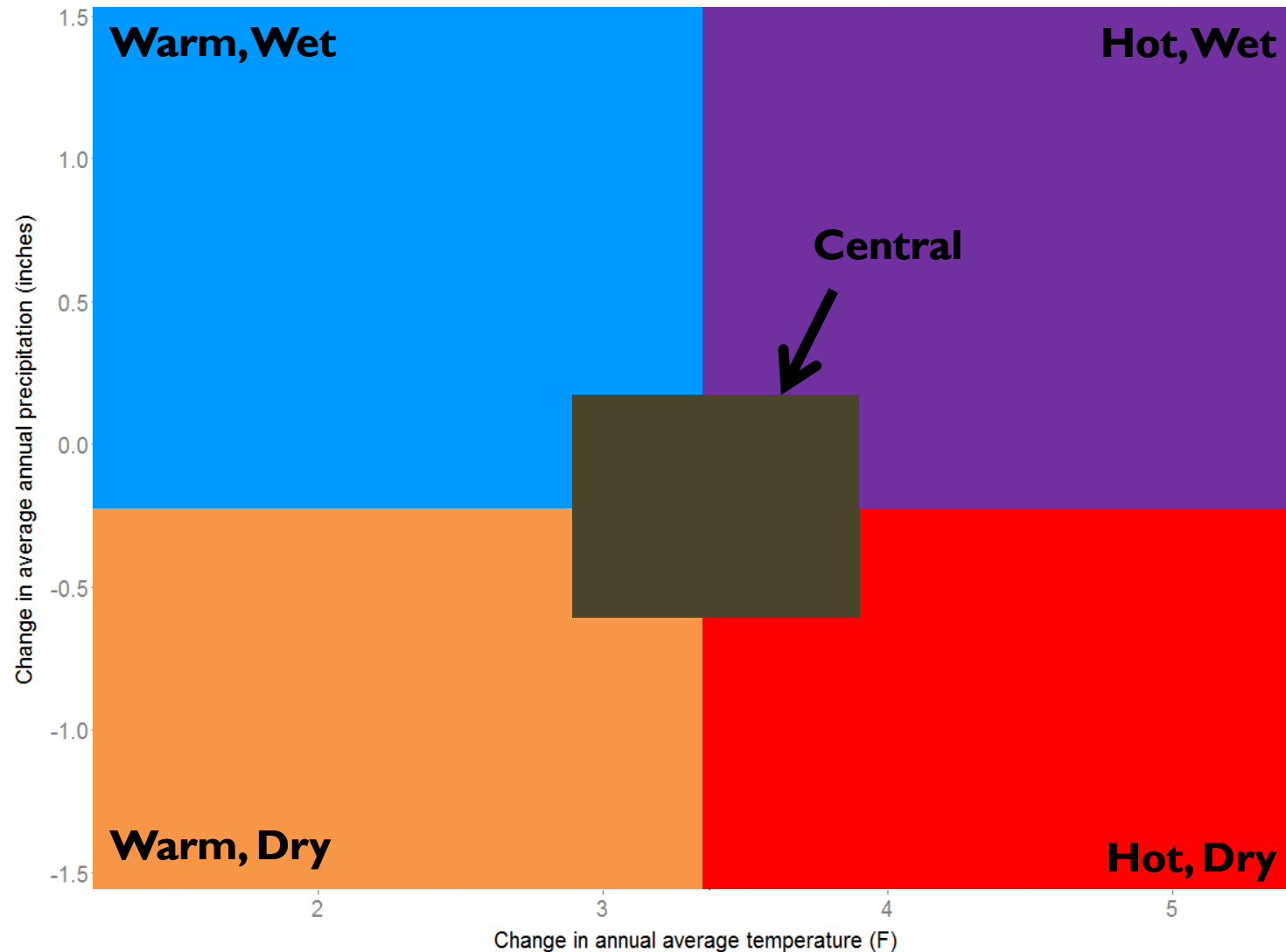
Data & Methodology

- ❑ Baseline: 1950-1999
- ❑ Future: 2025-2055 (centered on 2040)
- ❑ Southwest Albuquerque

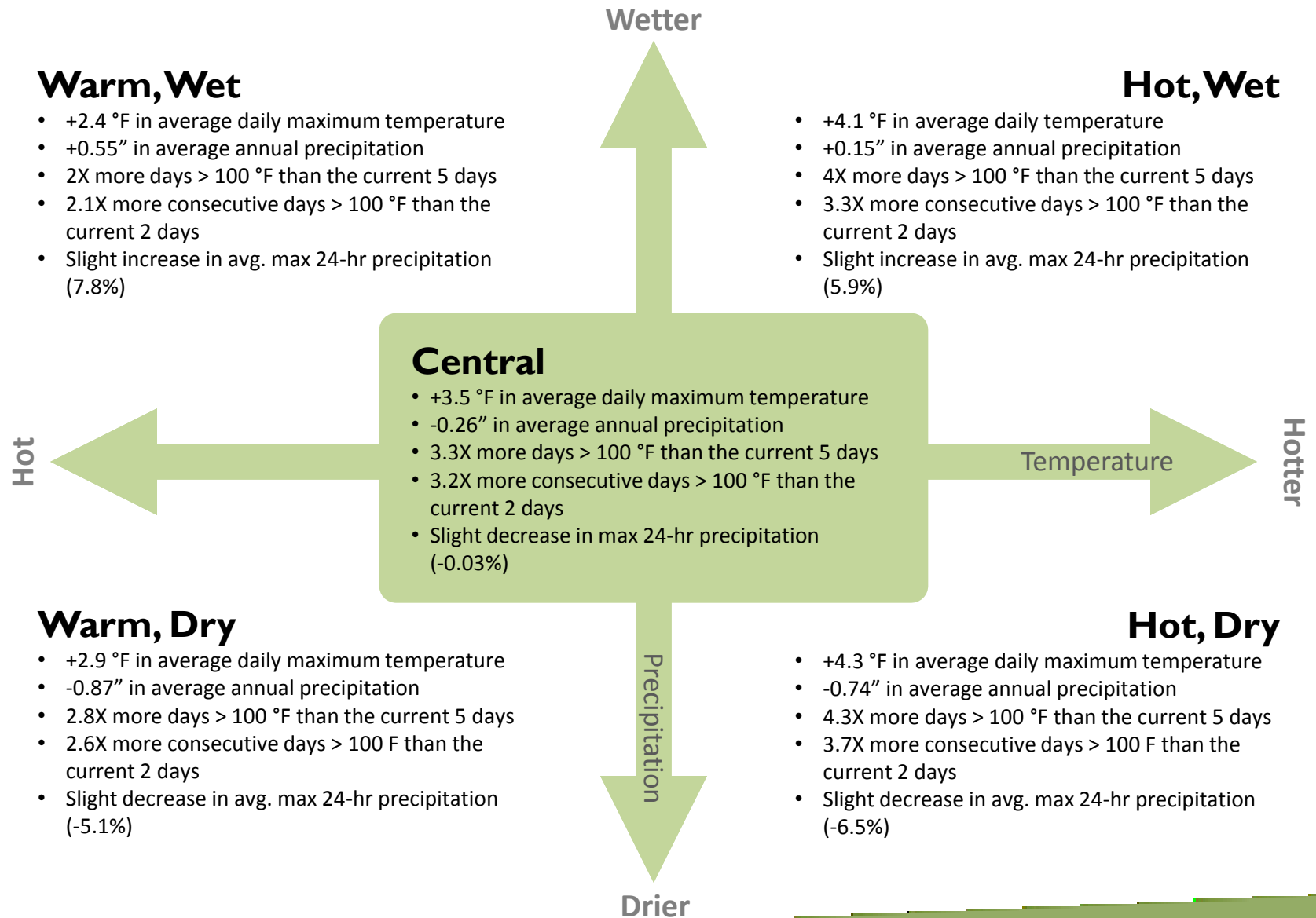
Variables
Precipitation (mm/day)
Maximum daily temperature (°C)
Minimum daily temperature (°C)
Average daily temperature (°C)— <i>derived by averaging max & min</i>
Average daily wind speed



Projected Changes in Climate Means - 2040



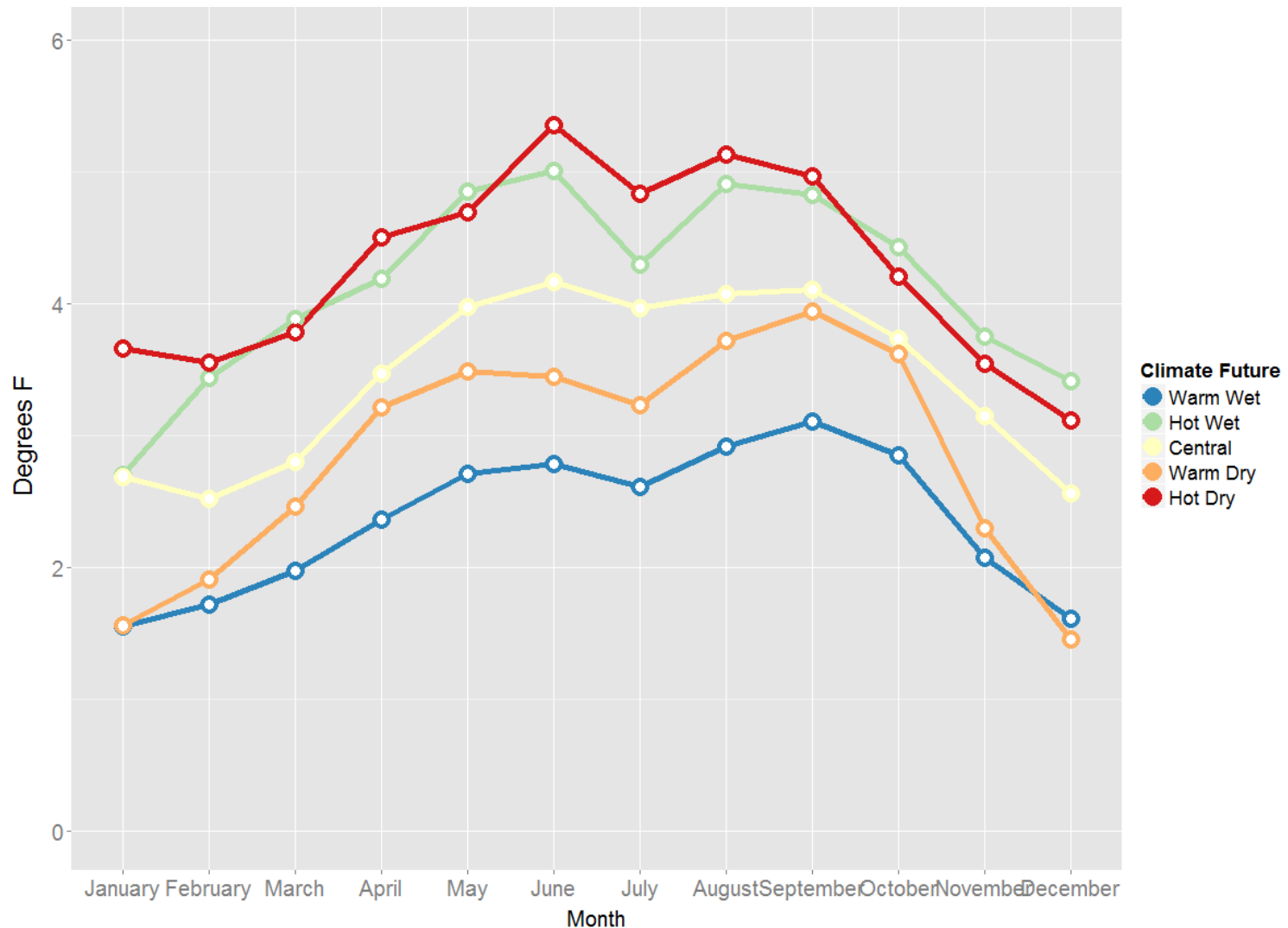
Central NM Climate Futures - 2040



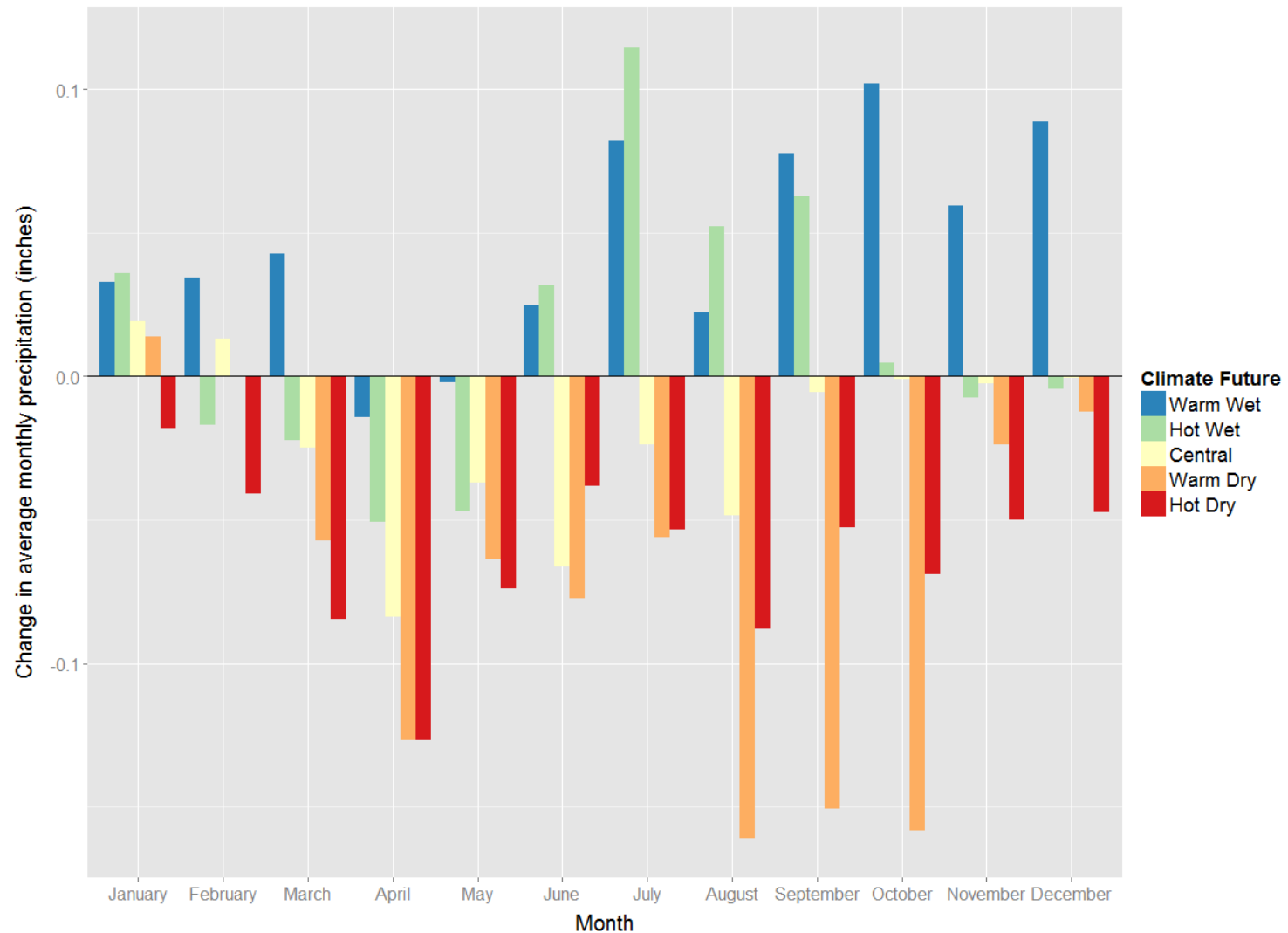
Downscaled Findings

- ❑ Monthly temperature change
- ❑ Monthly precipitation change
- ❑ Annual days >100 °F
- ❑ Consecutive days >100 °F (Heat wave indicator)
- ❑ Maximum 24-hr precipitation amounts (Flash flood indicator)

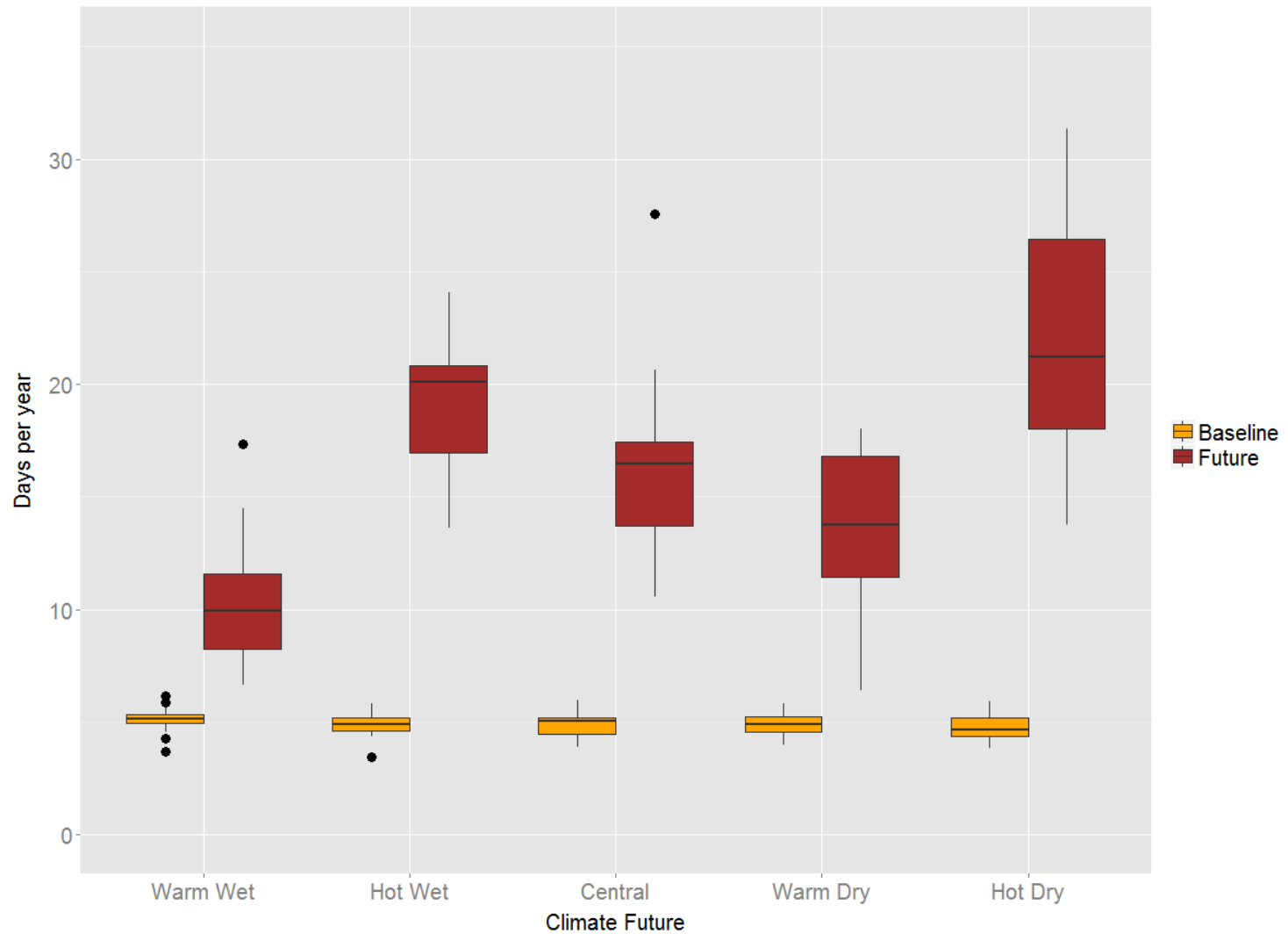
Change in Average Monthly Temperature



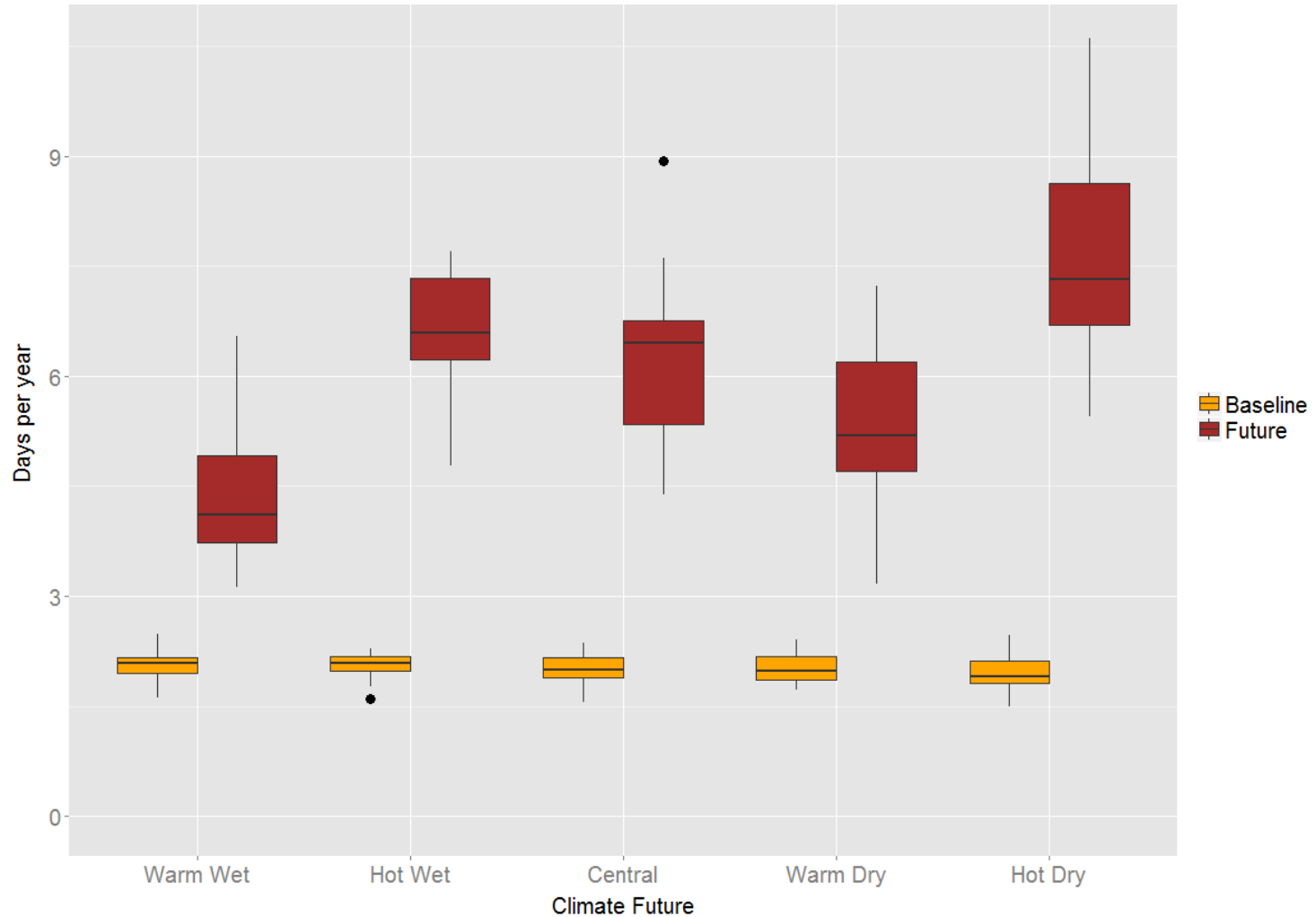
Change in Average Monthly Precipitation



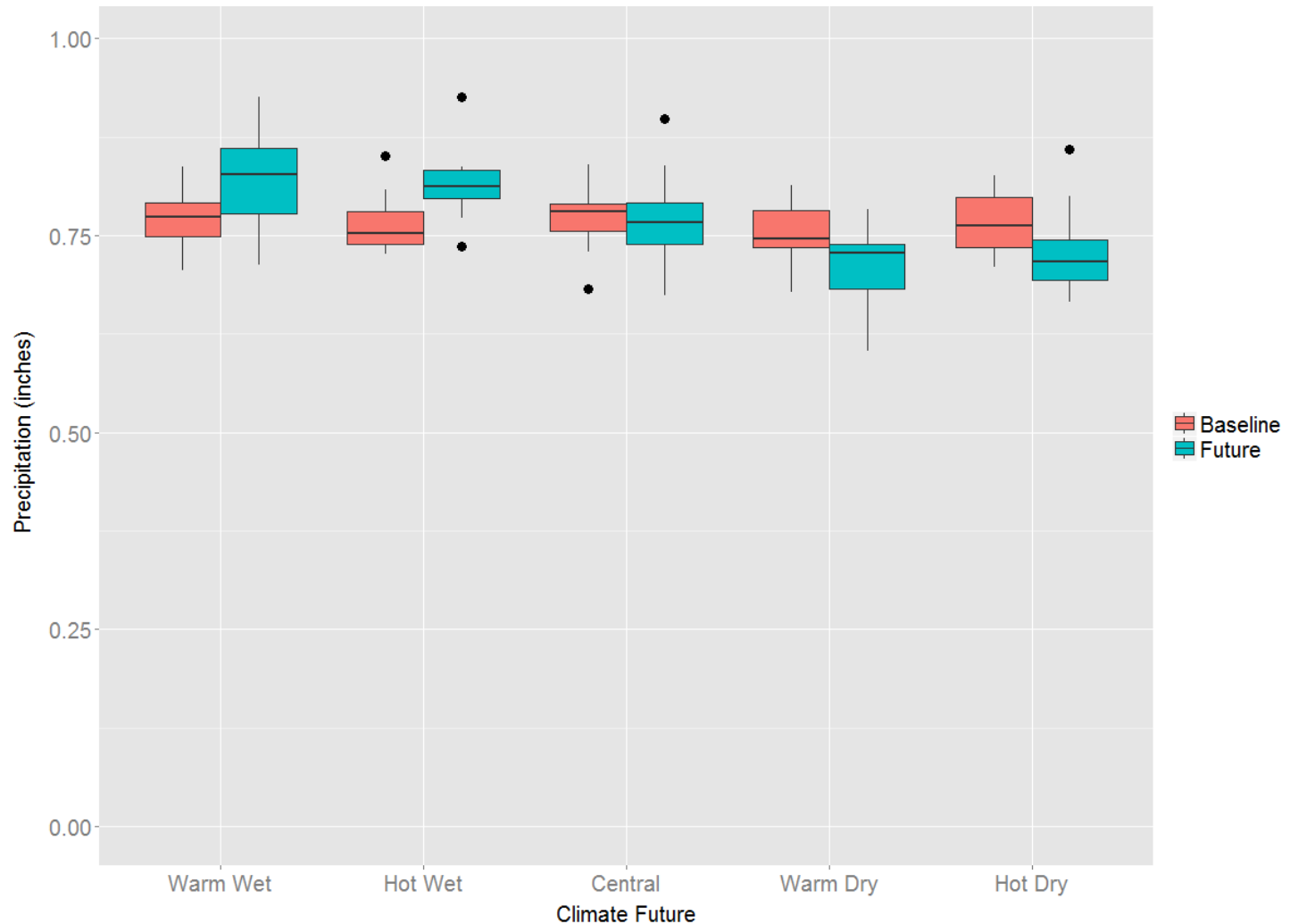
Annual Days >100 °F



Consecutive Days >100 °F



Maximum 24-hr Precipitation Amounts



Big Picture Climate Implications

- ❑ Greater changes in temperature than in precipitation
- ❑ Projected **2.4 °F to 4.3 °F increase in annual temperature**
- ❑ Projected **-13% decrease to +10% increase in annual precipitation**
(Bureau of Reclamation)
- ❑ More pronounced temperature increases in the summer
- ❑ More drought regardless of precipitation due to the increased evaporation from higher temperature
- ❑ More, longer heat waves
- ❑ More extreme, variable precipitation events

Implications for the Region

❑ Transportation-related

- Higher maintenance costs (e.g., faster pavement deterioration)
- Construction and operations implications (e.g., shorter construction season)
- More damage from extreme events (e.g., flash floods, wildfires, and landslides)

❑ Land Use/Regional Planning

- More frequent water shortages
- Greater power demand
- Higher vulnerability for development near riparian areas/on the urban-wildland interface

Questions?

